

**Claims**

1. Apparatus for coating a substrate by means of a chemical gas phase separation process, characterised by a not merely two-dimensional arrangement of the filaments (5, 17, 26) at least partially surrounding the substrate to be coated, but a three-dimensional arrangement in respect of the substrate.
2. Apparatus according to claim 1, characterised in that the filaments (5, 17, 26) completely surround the substrate to be coated.
3. Apparatus according to claim 2, characterised in that the suspension of the filaments matches the shape of the substrate to be coated or of a tool (15, 22).
4. Apparatus according to claim 3, characterised in that the filaments are at a spacing of 1 mm to 30 mm from the substrate surface to be coated.
5. Apparatus according to claim 1, characterised in that the filaments (5) are clamped in a straight line between two near semi-circular half-shells (2, 3) and a short-circuiting ring arranged parallel therewith.
6. Apparatus according to claims 1, characterised in that the filaments (17) are clamped at both ends in holders (18, 19) arranged parallel with each other, and that a curvature is formed by the dead weight of the filaments (17).
7. Apparatus according to claim 6, characterised in that radiation screens (23) are arranged on the holders (18, 19) as a protection from heat loss.
8. Apparatus according to claim 6, characterised in that holders (24) have slots (25) for flexibly clamping in filaments (17) of different lengths.

9. Apparatus according to claim 7,

characterised in that

holders (24) have slots (25) for flexibly clamping in filaments (17) of different lengths.

10. Apparatus according to claims 1,

characterised in that

the filaments (26) are arranged in two rows in concentric circles, so that they are arranged respectively between projections (27) from the tool (28) or substrate in the inner row (29) and in gaps between filaments in the outer row (30).

11. Apparatus according to claim 1,

characterised in that

filament retainers (8, 16) and the filament retaining ring (8) of the half-shells (2, 3) or holders (18, 19) and/or a clamping ring (9) of the short-circuiting ring (4) are provided tapering with a bevelled wall (13, 14).

12. A method of coating a substrate by a gas phase separation process,

characterised by simultaneous coating of the substrate from more than one side.

13. A method according to claim 12,

characterised in that

In an apparatus (1) with two half-shells (2, 3) and a short-circuiting ring (4) a tool (15) or substrate to be coated is inserted in the apparatus with vertical orientation, while in an apparatus with two holders (18, 19) and freely suspended filaments (17) the tool (22) or substrate to be coated is inserted with horizontal orientation.

14. A method according to claim 13,

characterised in that

the tool (22) or substrate inside the apparatus is turned about its horizontal axis of rotation with the two holders (18, 19).

15. A method according to claim 12,

characterised in that

the gas phase separation process is a chemical vapour deposition process (CVD).

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